

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application:	:	PETITION TO MAKE SPECIAL AND
Number not assigned as of the	:	ADVANCE EXAMINATION PURSUANT
date of this petition.	:	TO 37 CFR §1.102
Art Unit Number: Not yet assigned	:	
Filing Date:	:	
First Named Inventor:	:	
Robert T. Bigelow	:	
Title:	:	
Flexible Structural Restraint	:	
Layer for use with an Inflatable	:	
Modular Structure	:	
Filing Date:	:	
Confirmation Number:	:	
Not yet assigned	:	

PETITION TO MAKE SPECIAL AND ADVANCE EXAMINATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

Applicant respectfully requests that the patent application for a, "Flexible Structural Restraint Layer for use with an Inflatable Modular Structure" be advanced in the examination procedure. This petition and the supporting declaration of Robert T. Bigelow is based upon 37 CFR §1.102 as the invention will materially enhance the quality of the environment and contribute to the development or conservation of energy sources. Referencing 37 CFR §1.102(c), no fee is required for this petition.

INTRODUCTION AND BACKGROUND

Assignee, Bigelow Aerospace (hereafter "Bigelow"), of the present invention is actively engaged in the development and deployment of a privately funded inflatable modular human habitat into space (hereafter "Modular Habitat"). (Declaration of Robert T. Bigelow ¶¶ 1-4, hereafter "Decl. of Bigelow"). To that end, Bigelow has committed tens of millions of dollars in research and development of the various technologies necessary to achieve this goal. (Decl. of Bigelow ¶ 5).

The module has a flexible and inflatable multi-layered shell covering a rigid structural core. The shell can be compressed allowing the module to fit as in the payload compartment of a number of conventional lifting vehicles. When the module is placed in orbit, the shell can be inflated to many times its compressed size. When inflated, the module has more internal volume than a typical hard shell space structure of a similar launch payload size. The extra volume of the inflatable module allows for more crewmembers, equipment, and experiments. Thus, more can be accomplished with a single launch of an inflatable module than can be done with a single hard shell module. (Decl. of Bigelow ¶ 6).

A critical element to the development of an inflatable module is the use of a flexible restraint layer. A flexible restraint layer has three principle functions. (Decl. of Bigelow ¶ 7).

First, the restraint layer provides the outer boundary for the expansion of the air bladder when the shell is fully inflated. (Decl. of Bigelow ¶ 8). Second, the restraint transfers the load caused by inflation of the shell from the less structural air bladder to the core. (Decl. of Bigelow ¶ 9). Finally, the restraint layer is pliable which allows the restraint layer to be folded with the shell for loading into a payload of a lifting vehicle in the pre-deployed configuration and then to expand in the deployed state. (Decl. of Bigelow ¶ 10).

The flexible restraint layer is a critical element in the development of Modular Habitat, and the Modular Habitat is pivotal in progressing areas of space science that will enhance mankind, the environment and lead to the development, or conservation, of

energy. Thus, applicant contends that the present invention is suitable for advancement in the examination process pursuant to 37 CFR 1.102 as embodied in MPEP §708.02.

**MATERIAL ENHANCEMENT TO THE ENVIRONMENT AND
CONTRIBUTION TO THE DEVELOPMENT OR CONSERVATION OF
ENERGY.**

The Modular Habitat is a space station that costs less to develop, manufacture, and deploy than current semi-permanent structures in space. (Decl. of Bigelow ¶¶ 3,6). As a result, access to experimentation in the micro-gravity of space would no longer be so cost prohibitive as to afford this opportunity to only governments or private entities with vast resources. The Modular Habitat is a space platform that provides an unparalleled opportunity for people, institutions, governments, and business entities on a much broader demographic to participate in researching numerous areas of science within the environment of space. (Decl. of Bigelow ¶ 11).

It is undisputed that the development of space exploration is anticipated to have a dramatic impact on the advancement of human health and development. (Decl. of Bigelow ¶ 12). Research is currently scheduled, and indeed has been underway, to accelerate breakthroughs in medical science that could significantly improve the human condition. (Decl. of Bigelow ¶ 12). This alone directly improves the environment in which we all live and justifies an expedited review of the method for making an opening in the bladder of an inflatable modular structure for receiving a window.

In the area of biotechnology, in 1997 Dr. Lawrenece T. DeLucas of the Center for Macromolecular Crystallography opined that research into protein crystal growth and tissue culturing in space are expected to have a dramatic effect on the understanding of diseases such as heart disease, stroke, diabetes, and bacterial and parasitic infections. (Decl. of Bigelow ¶ 13). A natural consequence of this research could be more effective treatments of numerous diseases. Better treatment can reduce the need for hospitalization stays and the use of materials associate with those stays such as prescription of other medications, use of disposable items such as plastic gloves paper sheets and gowns, and cleaning of hospital rooms. It is apparent that such decreased demand would reduce the

need to use many of the basic life sustaining natural elements such as water, oxygen, wood based fibers, and the like.

Other areas of research include the investigation of making stronger, better, and longer lasting materials for use on Earth. (Decl. of Bigelow ¶ 14). Such an endeavor reduces the need to replace materials as often, which means that less energy is expended in the making of these materials to replenish worn out items. (Decl. of Bigelow ¶ 15). Such a result is a conservation of energy thus warranting an expedited examination of the application. Further, as less materials need to be manufactured, there is less of a draw on many of the basic life sustaining natural elements such as oxygen and water used in many production processes. (Decl. of Bigelow ¶ 16).

Energy research is another area of investigation. NASA plans to engage in research in combustion science in the micro-gravity environment of space that is expected to have a dramatic effect on the efficiency of combustion engines and dramatically improve the environment. For example, it is estimated that a 2% increase in burner efficiency would save the U.S. \$8 billion per year. (Decl. of Bigelow ¶ 17). This increased efficiency should also translate into less pollution in the environment, and would require less oxygen in the combustion process and thus there is less of a draw on a basic life sustaining natural element. While NASA does not currently have plans to conduct such research on the Bigelow Modular Habitat, the Modular Habitat would make this research available to a broader range of experimenters and could thereby increase the research effort in this field. (Decl. of Bigelow ¶ 18).

Pursuant to MPEP §708.02 V, applicant has shown how the invention contributes to the restoration or maintenance of life sustaining elements. Also, in accord with MPEP §708.02 VI, applicant has identified how the invention leads to more efficient utilization or conservation of energy sources. Neither requires a search of the prior art and no such search has been represented herein.

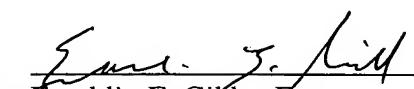
CONCLUSION

A flexible structural restraint layer for use with an inflatable modular structure is instrumental in the deployment of a Modular Habitat in space for research into

technologies that would reduce reliance on basic life sustaining natural elements and materially contribute to the utilization and conservation of energy sources. To that end, the flexible structural restraint layer is integral in the creation of the Modular Habitat and contributes to the aforementioned goals.

For the reasons identified herein applicant respectfully requests that the flexible structural restraint layer for use with an inflatable modular structure be advanced in the examination process.

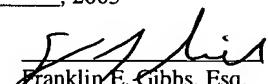
Dated: 11-25-03


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USPTO No. 44,709

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as required for Express Mail in an envelope addressed to: Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on: Nov. 25, 2003

Dated: Nov. 25 2003


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